

Neolithisation in southwest Asia – the path to modernity

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ABSTRACT – *Two questions are discussed that turn out to be related. The first was posed originally by Robert Braidwood more than fifty years ago, and concerns why farming was adopted in southwest Asia early in the Neolithic, and not earlier. The second concerns the usually opposed processualist and post-processualist approaches to the Neolithic. The paper seeks to model the processes at work through the Epi-palaeolithic and early Neolithic, showing how the trend towards sedentism and storage of food resources coincided with the emergence of fully symbolic cognitive and cultural faculties. The former fed more mouths, and led to the adoption of farming practices that further intensified food productivity. The latter made possible and desirable the symbolic construction of large, permanently co-resident communities. The spread of farming may then be understood as the expansion of a complex way of life that involved communities living together in larger groups, with denser, richer cultural environments, controlling not only the built environment of their own settlements, but also the productivity of the agricultural environments that surrounded them.*

IZVLEČEK – *Razpravljamo o dveh vprašanjih, za kateri se je izkazalo, da sta povezani. Prvo je zastavil Robert Braidwood pred več kot petdesetimi leti in se ukvarja s tem, zakaj je bilo poljedelstvo sprejeto v jugozahodni Aziji v zgodnjem neolitiku in ne prej. Drugo pa se nanaša na nasprotujoče se procesualne in post-procesualne pristope v neolitiku. V članku skušam modelirati proces, ki je deloval v času epi-paleolitika in zgodnjega neolitika. Pokažem, kako je trend v smeri sedentizma in shranjevanja hrane sovpadal s pojavom čisto simbolnih, kognitivnih in kulturnih zmožnosti. Prvo je nasitilo več ust in je pripeljalo do sprejema kmetijskih praks, ki so pospešile proizvodnjo hrane. Drugo pa je oblikovalo takrat mogočo in željeno simbolno strukturo velikih, sobivajočih in stalno naseljenih skupnosti. Širitev kmetovanja lahko tako razumemo kot ekspanzijo kompleksnega načina življenja, ki je vključevalo življenje velikih skupnosti druge ob drugi, bogato kulturno okolje in nadzor vasi in polj ter pašnikov, ki so jih obkrožali.*

KEY WORDS – *Epi-palaeolithic; Neolithic; cognitive archaeology; cultural evolution; origins of farming*

Introduction

There are two problems in the Neolithic of southwest Asia that have proved resistant, and neither have been the central concern of those working on the Neolithic. One of them has persisted since the middle of the twentieth century, while the other appeared more recently. I shall attempt solutions to those problems. The process of Neolithisation as I will model it in a sketchy outline leads to the conclusion that the early Neolithic societies had evolved minds and symbolic cultures that were for the first

time in human history recognisably like those that we enjoy. In that sense, the Neolithisation process in southwest Asia was the path to modernity. At the end of the period with which this essay is concerned, around 7000–6500 BC, there are archaeological indications of increases in the form, extent and density of settlement around the southwest Asian core area. These indications may suggest that there was demographic growth (together with other factors) within the region that required expansion of the set-

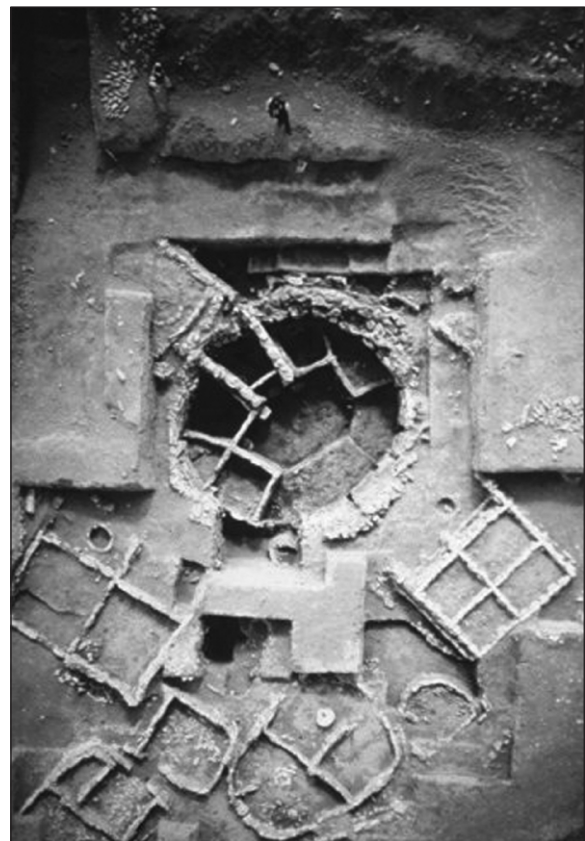
tled area. However, the rest of southwest Asia was by no means an empty quarter. I suggest that expansion from the core area produced a ripple effect as societies in other parts of the region began to feel demographic pressure expanding from the core area, and were themselves also adopting the new, dynamic symbolic cultural package that included mixed farming, and beginning to experience population growth. The pressures within southwest Asia thus expanded in whichever directions were possible, and may have provided the initial pulse of Neolithic cultural forms and farming economies into southeast Europe.

The persistent question that has hovered over us since the middle of the twentieth century was that posed by Robert Braidwood when he sought to unravel and understand what we would now call the process of Neolithisation on the basis of his multi-disciplinary research programme in northeast Iraq (*Braidwood 1960* is a simple, direct and accessible statement of his views). Following the conclusions of the early work by his environmentalist collaborators, Braidwood dismissed climate and environmental change at the end of the Pleistocene period (Gordon Childe's hypothesised driver) as the pressure that prompted early Neolithic societies to adopt crop cultivation and animal herding. His collaborators found no evidence of significant climatic or environmental change in the final Pleistocene and earliest Holocene. In any case, Braidwood reasoned, similar sequences of cold phases followed by warming had occurred frequently during the Pleistocene without prompting human societies in southwest Asia to adopt farming. If the context of the initial adoption of farming was not one of environmental pressure, then there must be some cultural reason; the vulnerability of Braidwood's proposals were his inability to suggest in what way culture might have been 'ready' 12 000 years ago, at the end of the Pleistocene, and unready at earlier times.

The second question is how to integrate two views of the Neolithic that have been completely opposed to one another, each claiming to be the only proper way to approach the problems to the exclusion of the other. The first view, the processualist, ecological view, was first articulated in the later 1960s. Two American scholars, Lewis Binford and Kent Flannery, took quite a different view from that of Braidwood (*Binford 1968; Flannery 1969*). Lacking evidence of a driving force in climatic and environmental change, they opted for an ecological process in which an increase in population growth became the environ-

mental pressure that pushed certain groups of hunter-gatherers. For our purposes, the processualist view may be characterised by Ofer Bar-Yosef, who has great authority within the field and international respect, and who has co-authored a more sophisticated synthesis in the light of the great volume of recently available data (*Bar-Yosef & Meadow 1995*). The other view may be characterised by the figure of Jacques Cauvin, who would shudder at the idea that he might be thought a post-processualist, but whose dismissal of processualist explanations puts him in the same camp (*Cauvin 1994; 2000*). Cauvin's account stresses the priority of the emergence of symbolic culture in a psycho-cultural transformation of the human mind.

I am attempting to relate these two approaches to Neolithic phenomena, the adoption of farming economies, and what I call the facility for the symbolic construction of complex, multi-layered concepts of community, by relating them back to a single prior cause. In the terms used by Bruce Trigger in his essay on the rival epistemologies underlying schools of archaeological explanation, there is an epistemologically based opposition between the processualist



Jerf el-Ahmar. A vertical view of the subterranean communal building 1 at the centre of the early settlement, among houses of various shapes.



Jerf el-Ahmar. Communal building 1 was more than two metres deep and about 9 metres across. At least part of it had been roofed, presumably the cells, symmetrically arranged about an axis. At the end of the structure's use, a body was placed face down on the floor of the open area to the left, and the empty building was set on fire before the void was filled with soil.

(positivist) and the post-processualist and other idealists' camp (Trigger 1998). And I am perhaps attempting a realist synthesis that follows Trigger's proposed solution. In that regard, I find that I am following a similar path to that recently outlined by Marc Verhoeven in his essay proposing 'a holistic approach to domestication' (Verhoeven 2004), and I shall return to this major paper when I have proposed my own synthesis. The prior cause to which I refer above will be described as a complex of interacting cognitive, social and economic factors. Key aspects of the complex are the emergence of larger social groups resident in permanent village communities, and the emergence of fully symbolic culture and cognitive faculties in human minds to match. It will be apparent that this complex of factors includes one that is universal (the co-evolutionary process of mind and culture) with others that are regional (how societies in southwest Asia constituted themselves and how they operated at the level of strategies of subsistence economics within the resources of the natural environment).

Braidwood's killer question

We can go right back to Robert Braidwood's work in the 1950s and early 1960s. Based on his multi-disciplinary research, he rejected the idea that Neolithic farming was a response to environmental pressures brought about by climatic change. Similar climatic and environmental changes had occurred repeatedly in the Pleistocene without bringing about the human response of adopting farming. He concluded that there must have been some cultural factor involved. Jacques Cauvin labelled that factor psycho-cultural, but was still unable to explain why such a psychological revolution in the use of symbols occurred at the end of the Pleistocene and the beginning of the Holocene. Finally, he published his proposed explanation as a hypothesis that would need to be debated and, discussed, and for which further evidence would need to be sought (Cauvin 1994; 2004).

Lewis Binford's essay on Post-Pleistocene adaptations (Binford 1968) modelled a process that was not grounded in the archaeology of southwest Asia. But Kent Flannery drew upon his field research experience in southwest Iran, when he developed a closely comparable processualist model which he called the broad spectrum revolution (Flannery 1969). His ideas about the importance of the change to a broad spectrum hunting strategy and his neglect of the significance of stored plant foods mean that the model needs some modification, but it can be

made strong in the context of our current knowledge, mostly derived from Epi-palaeolithic sites in the southern Levant. For Flannery, the revolutionary moment occurred when hunter-gatherers began to focus on broad spectrum hunting and gathering (which we can redefine somewhat as harvesting and storing nutritious, hard seed plant species together with broad spectrum hunting), which implied the adoption of a more sedentary life. I prefer to call them hunter-harvesters. From that time in the Epi-palaeolithic, it only required pressure on finite wild food resources, and both Binford and Flannery argue for population growth as the force exerting pressure to adapt.

Both Bar-Yosef, and Gordon Hillman with Andrew Moore depend upon the Younger Dryas reversal in the last millennium of the Epi-palaeolithic as the environmental force pushing communities to adopt cultivation and thus to initiate plant domestication (Bar-Yosef & Belfer-Cohen 1989; Bar-Yosef & Meadow 1995; Hillman 1996; Moore & Hillman 1992; Moore, Hillman & Legge 2000). Moore and Hillman are concerned essentially with the final Epi-palaeolithic period and the impact of the Younger Dryas, whereas Bar-Yosef, taking a deeper perspective starting from the end of the LGM, employs a push-and-pull model, in which there were alternating environmental phases that encouraged expansion or offered opportunities, followed by phases that exerted pressures requiring urgent adaptation. Bar-Yosef's model adds a social factor to the economic-ecological and environmental factors. Thus, the recovery from the LGM encouraged groups to focus on the increasingly available plant foods such as cereals and pulses. But then the Younger Dryas reversal pressed on final Epi-palaeolithic communities which had become larger sedentary groups, unable to opt for the flexibility of small-group mobility because the environment was



Jerf el-Ahmar. When the first communal building was destroyed, posts were removed and in one of the post-sockets a human skull was buried.

too packed with other groups. But once again, similar climatic and environmental oscillations had happened earlier in the Pleistocene, and Braidwood's killer question still applies. Processualists like Bar-Yosef would probably respond that an inevitable process was set in motion when Epi-palaeolithic hunter-harvesters adopted the trend towards sedentism; at least in Bar-Yosef's view, the hunter-gatherer population had tended to concentrate at a higher density in the Levant in consequence of the LGM, and there was a trend among Epi-palaeolithic hunter-harvesters to live in larger, more permanent groups. Although the hypothetical concentration of hunter-gatherer populations in the Levant in the LGM remains speculative, the size and number of Epi-palaeolithic open sites and the expansion of the occupied area around the mouths of caves and rock-shelters in the Levant seems real. But this only pushes Braidwood's question back to an earlier stage. Instead of asking why some groups began to engage in cultivation when they did, we now ask why they began to engage in harvesting and storing nutritious, hard-seeded crops, or why they sought to exchange their traditional mobility and fluidity of group membership for a trend towards sedentary life in permanent village communities. Once again, the opportunities offered by the recovery from the LGM (greater availability of wild cereals and pulses) would have occurred several times earlier in the Pleistocene, without the consequences that we observe in the Epi-palaeolithic.

As far as concerns the adoption of cultivation leading to plant domestication, the force that exerted pressure to invest in the added labour of clearing the ground, digging and planting is contested. Some appeal to population growth leading to population pressure, while others believe that the Younger Dryas exerted a climatic-environmental pressure. In



Jerf el-Ahmar. A hand of the human body that was laid face down on the floor of communal building 1 before the structure was set on fire and filled.

truth it is practically impossible to decide between them, and one could add another hypothetical force in the shape of environmental degradation brought about by over-exploitation by intensive hunter-harvesters who were (semi-) sedentary. Whatever the source of the pressure for societies that had been practising the hunter-harvester way of life for millennia, living in relatively large and socially coherent communities, there was no way back to small-group mobility. The response of further intensification (cultivation) in the production of their food resources sooner or later resulted in domestication. The adoption of agriculture was the end of a process, not the beginning, as Flannery emphasised almost forty years ago. The questions of why and how Epi-palaeolithic communities were drawn or pushed to develop a way of life that was so different from that of their Palaeolithic predecessors remains.

The nexus of Epi-palaeolithic social and subsistence strategies and the inevitability of farming

We can agree that the Epi-palaeolithic was a critical period, and we should note that it was a long period. Many who write with a central concern for the beginnings of farming use the final Epi-palaeolithic of the Levant (the Natufians) as a prelude to their main period of interest. In the Epi-palaeolithic period, new kinds of social group emerged, and new subsistence strategies were adopted. We should not under-esti-

mate the significance of the new, permanently sedentary communities that were an order of magnitude (approximately ten times) larger than earlier Palaeolithic groups. The new subsistence strategies involved storage of food resources, and the management and allocation of those resources required major changes in society and the development and adoption of new concepts.

Ohalo II illustrates the Epi-palaeolithic process particularly well, and shows how early it began (Kislev, Nadel & Carmi 1992; Nadel, Carmi & Segal 1995; Nadel & HersHKovitz 1991; Nadel & Werker 1999; Piperno *et al.* 2004). It is a very early Epi-palaeolithic site, dating to the boundary between the Upper Palaeolithic and the Epi-palaeolithic (around 20 000 years ago in uncalibrated radiocarbon terms). It may represent a precocious group, but there is no reason to think that they or the ecological niche that they chose were unique. The site emphasises that the characteristics that are frequently associated with the final Epi-palaeolithic (Natufian) of the Levant were already effectively present or presaged at the very beginning of the Epi-palaeolithic period, many millennia earlier. The site of Ohalo II is usually submerged in shallow water at the southern side of the Sea of Galilee, but is partly exposed at times when water levels drop. There has been little or no subsequent erosion or disturbance, and there are extraordinary conditions of organic preservation.



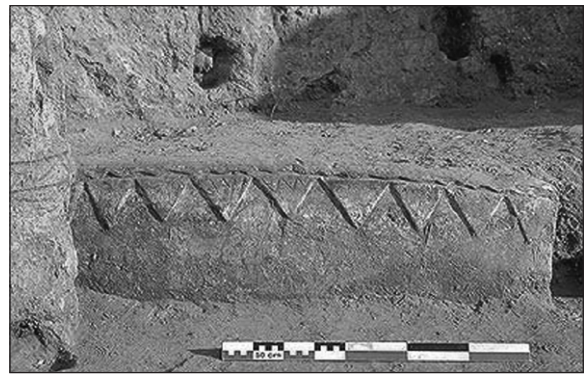
Jerf el-Ahmar. General view of communal building 2, which succeeded the earlier communal building in another part of the village. It was also subterranean, and the cavities where wooden posts that supported the roof have decayed can be seen behind the mud plaster of the wall. The interior had six large timber posts in a circle, and a series of large kerb-stones between the posts.

Ohalo II was a cluster of brush huts and hearths. There were also occasional burials among the huts. There is heavy stone equipment for grinding and pounding plant foods, and 120 species of plants, including cereals, large-seeded grasses, lentils, and vetches are evidenced. Traces of starch recovered from the surface of a grinding slab set in the floor of one of the huts have been identified as derived from the grinding of cereal (Piperno *et al.* 2004). The evidence of seasonality from the plant and animal and bird remains indicates year-round occupation. By the middle of the Epi-palaeolithic in the Levant there are examples of large, semi-sedentary or sedentary groups. In the last phase of the Epi-palaeolithic in the Levant (the Natufian) there were sedentary village communities numbering around 250 living

in the same place for many centuries, for example Abu Hureyra in north Syria (Moore, Hillman & Legge 2000), and Eynan ('Ain Mallaha) in north Israel (Val-la 1991). Some of the phenomena that are so dramatic in the early Neolithic can be seen developing in the last phase of the Epi-palaeolithic period, and to a lesser extent in the earlier millennia.

Situating the process in the context of cognitive and cultural evolution

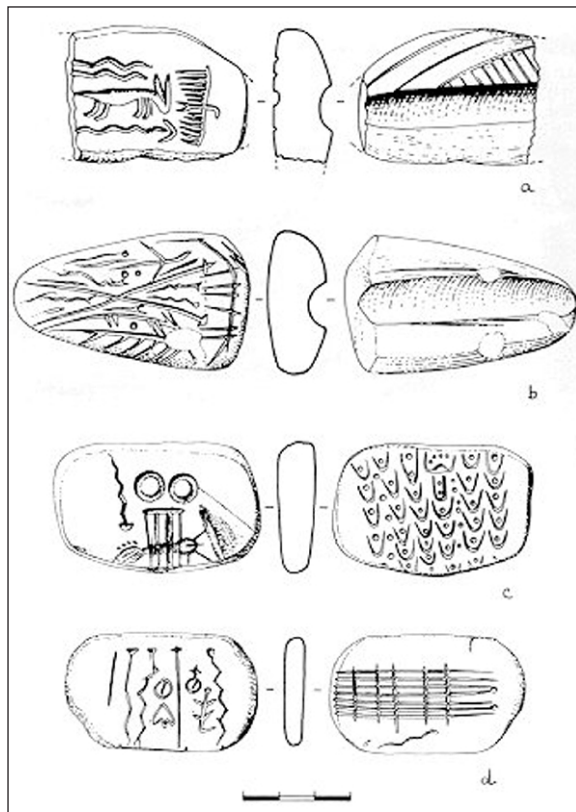
In response to what I called Braidwood's killer question – why then, why not earlier? – I want to situate these developments in new forms of social organization and new subsistence strategies in the context of the longer term evolution of human cognitive faculties. In particular, I am sure that the critical factor in long-term human cognitive evolution has been – and still is – the co-evolution of mind and culture. What I shall go on to argue here is that a particular stage in the co-evolution of mind and culture was essential if human social groups were to grow in size and permanence beyond the scale of earlier Palaeo-



Jerf el-Ahmar. One of the carved kerb-stones in communal building 2.

lithic mobile, flexible hunter-gatherer groups. That stage was marked by the emergence of human minds fully capable of managing systems of symbolic representation beyond language, using symbolic material culture as a mode of 'external symbolic storage' (a key phrase from Merlin Donald, see below). That stage having been reached, over the last ten thousand years or so, the rich cultural environment has become the essential environment within which further (increasingly rapid) cultural evolution has taken place, rather than the physical environment, or much slower biological evolution. Before developing that case, I will very briefly outline some of the background in cognitive and evolutionary psychology and its application in archaeology and prehistory.

Ahead of and separate from the recent explosion of publication on cognitive and evolutionary psychology and neuro-science, we should note the remarkable work of Peter Wilson on what he calls the domestication of society (Wilson 1988). Wilson, an anthropologist with a seemingly encyclopaedic acquaintance with the ethnographic literature, has written about hunter-gatherer settlement without apparently recognizing the relevance of his ideas for the prehistoric sedentary hunter-gatherers in southwest Asia. He differentiates between open and domestic societies. He argues that the adoption of a built environment had a profound effect on people's evolved social psychology. People's perception of their social selves was challenged. Buildings introduced privacy for interior space, as distinct from life in the public space. While challenging the evolved social psychology, living in what Wilson calls domesticated circumstances also offered exciting opportunities to use the built environment for symbolic representation (see Watkins 2004 or 2005 for a fuller discussion of Wilson's ideas, and a general survey of anthropologists, architects and social theorists on the symbolic potential of architecture).



Jerf el-Ahmar. (a) and (b) Two grooved stone objects (known as shaft-straighteners). (c) and (d) Two small limestone plaques. All four objects are decorated with incised motifs, but the left sides of (a), (c) and (d) are arguably groups of signs, rather than mere decoration.

Lesley Aiello (anthropologist at UCL) and Robin Dunbar (psychologist at Liverpool University) have been interested in the long-term evolution of the hominid mind, and the emergence of language (Aiello & Wheeler 1995; Aiello & Dunbar 1993; Dunbar 1992). They point to the unique trajectory of hominid evolution in developing a brain that supports larger social groups of inter-dependent individuals. Their studies conclude that the evolved human brain is biologically adapted for operating with social groups of a maximum number of 120 people. Dunbar has developed the theory that language evolved to facilitate gossip as a more efficient mode of communal grooming than the one-to-one grooming that serves in other sociable primate species (Dunbar 1996; 2004). Larger group sizes require advanced cognitive and cultural symbolising skills in order to frame the concepts that make large human societies work. Dunbar is one of a number of biologists, ethologists and psychologists who have worked on the question of how human societies overcome this biological barrier by using cognitive and cultural symbolising skills to formulate the powerful abstract concepts that underpin all modern social life (see, for example, Dunbar 1999).

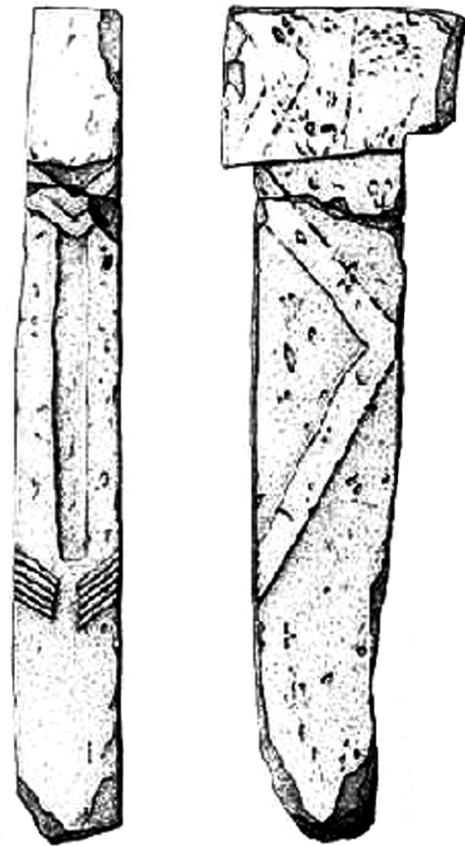
Boyd and Richerson, another anthropologist-psychologist team, have been working and writing on the theme of the co-evolution of mind and culture for a number of years (Boyd & Richerson 1982; Richerson & Boyd 2005). They are just one example of those who work on the principle of mind-culture co-evolution. By means of culture, humans have learned how to build up, communicate and share huge bodies of information. By means of language and symbolic culture in general, human minds have developed extraordinarily and quite uniquely complex modes of storing abstract information. Merlin Donald is a Canadian psychologist, whose first major book, *Origins of the Human Mind*, has had a major impact on the thinking of a number of archaeologists (Donald 1991). Donald argues that humans evolved new modes of cultural communication, each of which has changed the way that human minds work. The emergence of a full, modern language faculty, in Donald's view, was the second stage in that evolution. The third and most recent stage was the emergence of what he calls 'external symbolic storage', by which he means the ability to read and write, to store and communicate accumulated knowledge, information, stories, music, or mathematics. In his more recent book, Donald has developed his theories much further, elaborating the argument that the very consciousness that we contemporary (western) humans

enjoy depends completely on the cultural environment within which we have grown up from infancy (Donald 2001).

***Homo sapiens* symbolic representation and the emergence of external symbolic storage**

Let us recapitulate the situation then. *Homo sapiens* emerged in Africa 160k years ago. Before 100k years ago, some *Homo sapiens* were present in modern-day Israel, and by 60k they had spread as far as SE Asia, colonising Australia by 50k. Some time around 100–50k years ago, a full modern language faculty evolved. *Homo sapiens* had therefore evolved the capacity for conceptualising systems of symbolic representation. And by 70k years ago the first building-blocks of emergent symbolic material culture, such as incised pieces of red ochre, were present at Blombos and other sites in South Africa.

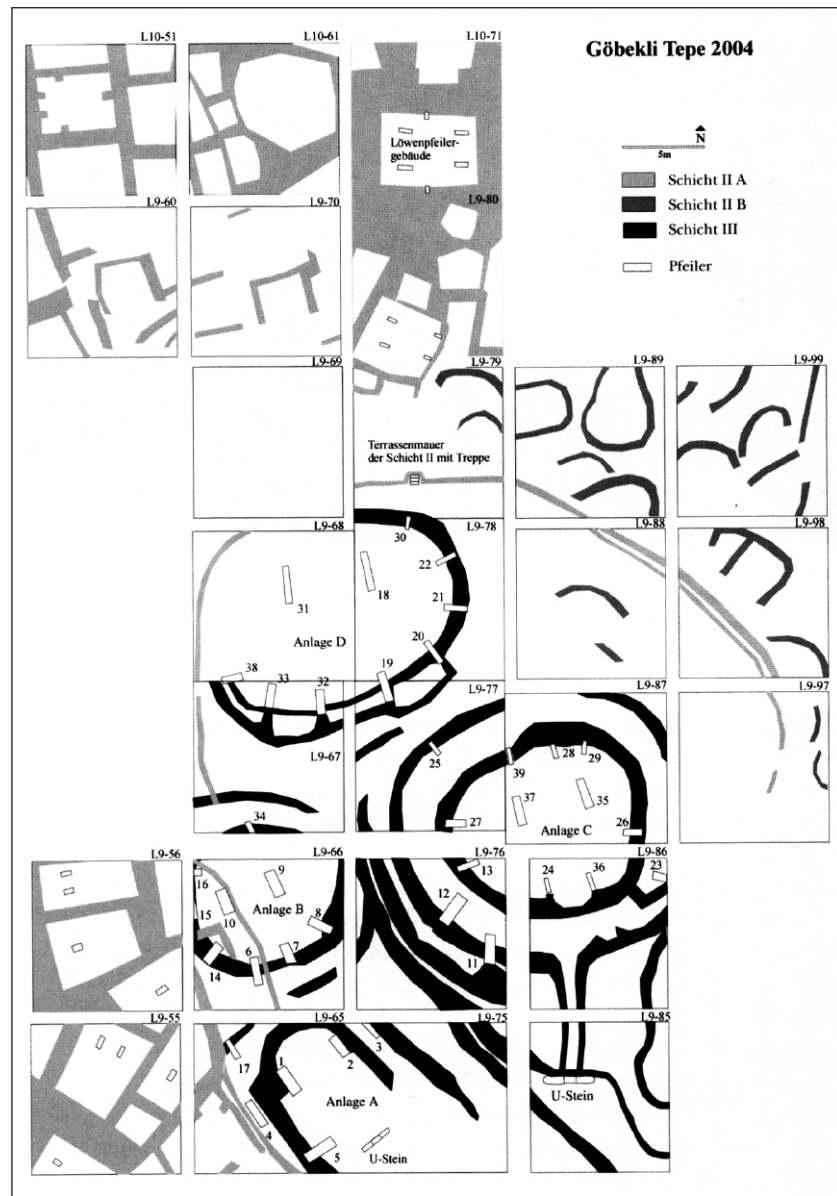
A fully modern language capability is the second of Merlin Donald's three stages in 'the evolution of cul-



Nevalı Çori. One of the T-shaped monoliths from the “shrine” at the centre of the village. Some of these monoliths show that they were anthropomorphic, having arms, bent at the elbows, and hands with clearly indicated fingers.

ture and cognition' (Donald 1991). It is important to recognize that our modern languages – and their predecessors for the last few tens of thousands of years – are complex systems of symbolic representation (Deacon 1997). The definition of words as arbitrary *signifiers* for things *signified* is only a small part of the story, and the addition of grammar and syntax takes us only a certain distance further towards understanding the extraordinary cognitive complexity of symbolic representation that underpins the actual linguistic skills of all modern humans. Language does more than make indexical links between signifiers and signified. In a system of symbolic representation, the tokens take their meaning in relation to one another. A sentence makes sense because statements take their meaning from the way that words are combined and interrelated. Language is a complex system of symbolic representation, but it is only one such system. Symbolic material culture offered people further opportunities for communication and storage.

Now it is time to relate cognitive and cultural evolutionary theory to the prehistory of southwest Asia. In the Upper Palaeolithic, which is the sole territory of *Homo sapiens*, there are distinct changes from the Middle Palaeolithic. We can note that cultural phases that have been distinguished by archaeologists studying chipped stone industries follow one another at a very much more rapid rate than in the almost static Middle Palaeolithic. Now that radiocarbon dating is available, and sufficient dates assembled, it has become clear there were parallel and different cultural traditions within the Levant that were for the most part synchronous. In the Epi-palaeolithic period in the Levant, the pace of cultural change, and the



Göbekli Tepe. The site is an artificial mound 300 m in diameter set on a bare mountain ridge. Each of the large structures was excavated into the mound and equipped with a pair of stones in the open centre, and more stones set into a “bench” around the sides. The oldest structures are the large, circular structures in the lower part of the plan, and they have each been rebuilt once or twice, each time on a smaller diameter.

extent to which material culture was used to differentiate contemporary cultural groups, increases further. The early Epi-palaeolithic, for example, lasted a few thousand years, while the late Epi-palaeolithic was only two thousand years in duration, and three sub-phases have been distinguished by those specialising in the study of Natufian lithics. In short, we can begin to see how *Homo sapiens* was learning to use material culture to construct and maintain social identity. Indeed, the cognitive and cultural environment was becoming the evolutionary environment rather than the biological environment.

When we reach the early Neolithic, I have argued elsewhere that architecture became the means that communities used to make concrete their concepts of their village societies, their structure and their central focus on corporate rituals and shared ideology and iconography (Watkins 2004a; 2004b; 2006). In addition to its structural representation of a community, architecture can provide the arena within which people play out the dramas of social life, as well as the enactment of rituals that are concerned with the community's relationship with higher powers. In communities that numbered several hundreds and even several thousands, shared religious beliefs and practices were essential because what Susan Blackmore (Blackmore 1999) calls religious 'memeplexes', developing the idea of memes and meme-plexes as the cognitive equivalents of genes and gene-complexes that was first articulated by Richard Dawkins (Dawkins 1976; 1986), incidentally provide the justification for altruistic behaviours (Watkins 2003). We do not need to be concerned with the controversy over whether memes constitute another form of replicator in another evolutionary process of selection, as that is simply a vocabulary for articulating the results of Blackmore's social psychology research. The important point is that shared religious ideas go beyond shared beliefs and communal rituals, because they promote norms of behaviour and commend altruism. In communities that numbered several hundred and even several thousand individuals, the cognitive and cultural capacity to create and reproduce

such abstract concepts as 'community' and 'neighbourliness' were essential.

I have written elsewhere (Watkins, *in press (a)*) about the complexity of symbolic construction of community, a subject on which the anthropologist Anthony Cohen has concentrated over a number of years of study and thought (see Cohen 1985 for a succinct account). Epi-palaeolithic, and even more so early Neolithic, co-resident communities (I hesitate to call them villages) extended beyond kin-groups and beyond the scale for which the biologically evolved human brain were capable of managing the exponentially complex social relations (Watkins *in press (b)*). At a higher level, co-resident communities participated in active networks of similar communities, or some kind of interaction sphere (Watkins *in press (a)*) seeks to take up and modify Renfrew's idea of the peer polity interaction sphere – Renfrew 1986). In this kind of system of multi-layered networks, we can see how individual communities exchange items through a wider network (obsidian, marine shells, attractive stone or objects made of attractive stone), and share cultural ideas and practices. However, each community may articulate those ideas and practices in their own way. There were no text-books in circulation that defined how houses should be designed or how dead bodies should be treated. General observations of widespread cultural phenomena, such as the "the PPNB culture" (which I have criticized at some length in Watkins, *in press (a)*) or "the skull cult", break

down as soon as they are examined in detail, because practices are usually not precisely replicated from site to site. There are domestic architectural forms that are found from site to site across a region. For example, Brian Byrd and Ted Banning have written about the pier-house in the later aceramic Neolithic of the southern Levant (Byrd & Banning 1988). And in south-east Anatolia, settlements had very large and substantially built houses, constructed from mud brick on stone and mud mortar foundations (Schirmer 1990). At one time, the foundations may consist of a series of square cells; at another time, they consist of clo-



Göbekli Tepe. View down into structure D, the largest and earliest so far investigated. The two main monoliths remain embedded in the fill of the enclosure, but it is clear that they must be at least 5 m tall. Around the sides of the structure, T-shaped monoliths are set radially in the retaining wall. At the far side, the excavations have reached a stone "bench". Traces of the walls of earlier, larger forms of the enclosure can be seen at the far side.

sely set parallel walls. It appears that the sequence of architectural changes – from grids to sleeper walls – is replicated at different sites across the region.

Intramural burials of bodies are found at many sites among or under the houses, in a special purpose building (as at Çayönü Tepesi), or in clusters closely associated with the settlement. It was a practice that began with the first open village settlements of the Epi-palaeolithic period, but in the early Neolithic it became widespread and common. There was a parallel practice, especially in the Levant, of secondary removal of skulls, which were then curated, some with facial features modelled in clay or plaster, before being re-buried in caches. But there is a lack of systematic regularity; what has been found at one site is not quite the same as has been found at others. Across the Levant the intramural burial of certain people, and the removal and curation of skulls took place within the architecture and design of the settlement. The ceremonies and rituals and symbolism were designed to find their place within the already rich symbolism of the architecture, the burial ceremonies perhaps being played out within kin-groups, while secondary ceremonies with retrieved skulls may have involved the wider co-resident community (*Kuijt 2000a; 2000b*).

There is now good evidence that settlements and their constituent buildings were laid out in accordance with some overall design. And there is now a series of settlements of the early Neolithic period that possessed monumental, non-domestic, special-purpose, communal buildings, especially in south-east Anatolia and the north of the Syrian Euphrates valley (see *Watkins 2004a* or *2005* for a fuller discussion with extensive references). The first to be recognized was at a salvage archaeology site, Nevalı Çori, close to the Euphrates (*Hauptmann 1988; 1999*). In the centre of a quite small village of houses very similar to those of contemporary Çayönü Tepesi (*Özdoğan 1999*) there was a sub-rectangular, sub-terranean structure (*Hauptmann 1993; 1999*). It had a stone “bench” around its walls, a lime plaster floor, and, in the centre of the floor area, a pair of tall stone pillars, only one of which was preserved. Similar stone pillars were set all around the perimeter in the bench. Through their lightly carved arms, bent at the elbows, and clasped hands the pillars reveal themselves as highly schematised anthropomorphs. With hindsight, it is now clear that there was a similar, subterranean building at Çayönü, which also had a pair of tall, stone pillars. In south-east Anatolia we are beginning to see a regional in-



Göbekli Tepe. One of the carved T-shaped monoliths from the earliest structure so far investigated. Here one edge is viewed, showing the heads of many snakes whose bodies are interwoven like nets on the larger, flat surfaces. There is also a spider and other creatures.

teraction sphere, or cultural network, of villages that are strongly constituted as communities, but which at the same time are strong participants sharing various symbolic elements of household and community life with other communities.

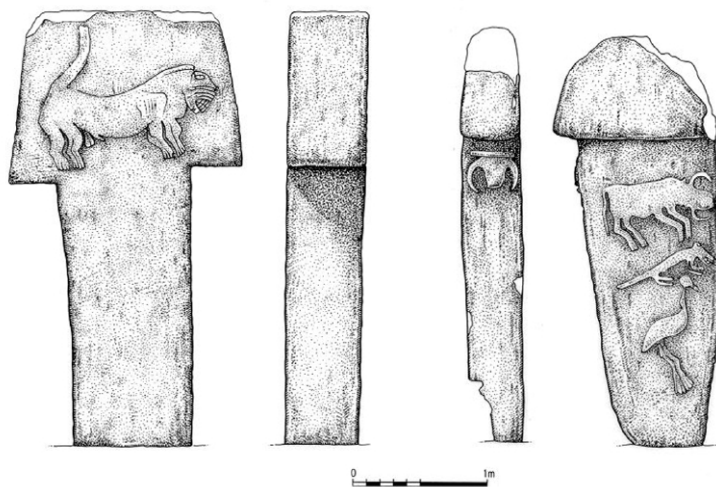
Equally dramatic is the succession of communal, special purpose structures in the heart of the village at Jerf el Ahmar, on the Euphrates in north Syria, close to the border with Turkey. The settlement belongs to the earliest aceramic Neolithic period. In an open space at the centre of the community, there existed large-scale, fully subterranean buildings, which the excavator, Danielle Stordeur, calls ‘*communautaire*’, communal or public buildings (*Stordeur et al. 2000*, and see *Watkins 2004a* or *2005* for fuller references). The first in the series was by far the largest construction in the village, and it was certainly not a house. Stordeur believes that it was a communal

food storage facility that also accommodated ritual activities. At the end of its life, it was emptied, its roof was removed, a human head was placed in an empty post-socket, and a decapitated body was placed face down in the central area. Finally, the structure was destroyed by fire, and the void that it left was obliterated. The village shifted its topographic focus, and that first structure was succeeded by a second large, circular, subterranean building. This one had a bench all around its interior, and the bench had a decorated stone kerb in which the horizontal stones were articulated with large juniper posts, sheathed with elaborate plaster cylinders, supporting the roof.

Even more remarkable is the site of Göbekli Tepe, near Urfa in southeast Turkey (*Schmidt 2000; 2002; 2005* and see *Watkins 2004a; 2004b* for fuller references). It is a man-made mound of cultural debris mixed with stones and earth, constructed over many centuries on top of a bare limestone ridge. Large circular or sub-rectangular structures were built in cavities excavated in the mound. Each structure contained an axial pair of huge limestone pillars, exactly like those at Nevalı Çori. The largest structure so far investigated has the tallest pillars, which are at least 5 m tall. Around the perimeter of each structure is a stone-built “bench”, and more pillars are set at right angles into the bench. Some of the pillars, like those at Nevalı Çori, have details that make clear that they are anthropomorphic. On their surfaces there are carvings in raised relief of a range of mammals, birds, reptiles, scorpions. Because of the lack of normal domestic settlement at the site or in its immediate vicinity, and because of the common features in the iconography at Göbekli Tepe and a number of other contemporary settlements, Schmidt has begun to

discuss the idea that Göbekli Tepe was a ceremonial “central place” for communities living over a very wide area, an idea quite similar in general terms to that of Colin Renfrew in relation to the great Neolithic ceremonial structures of southern England (*Renfrew 1973*).

What we are seeing in all sorts of forms, but particularly in the form of the architecture of buildings and the design of settlements, is external symbolic storage. Like language, it is a complex system of symbolic representation, but in material form. As remarked earlier, Donald originally defined the full emergence of external symbolic storage, the third and latest stage in the evolution of the human mind and culture, as being achieved with the development of alphabetic writing in the hands of the Greeks of the eighth and seventh centuries BC (*Donald 1991*). If he thought that the adoption of alphabetic writing in Greek constituted a significant point in the evolution of culture and cognition, it is not clear why other and earlier alphabetic writers (the Phrygians, the Phoenicians, or those who used alphabetic cuneiform at Ugarit, or other Semitic speakers using alphabets ancestral to the Phoenician in the second half of the second millennium BC) are passed over. For that matter, it is not at all clear what users of alphabetic scripts could write that those using hieroglyphic or hieratic scripts in Egypt, or the many peoples who used the cuneiform writing system developed in Mesopotamia, could not. The answer probably lies in what uses Greek writers soon began to find for their new writing system. But that is beside the point, for the real issue is whether non-language based systems of symbolic representation can be classed as external symbolic storage in Donald’s definition of the term.



Göbekli Tepe. Two of the monoliths. The stone on the left stood in a rectangular enclosure, the latest so far investigated.

At a conference held in Cambridge, where Merlin Donald’s ideas on the evolution of culture and cognition were tried and tested by invited archaeologists, Donald opened with a succinct account of the theme of his book (*Donald 1998a*). In his contribution Colin Renfrew proposed that Donald’s third stage involving external symbolic storage was achieved in terms of systems of symbolic representation involving material culture among the early farmers of the Neolithic, some millennia before the earliest known effective writing systems (*Renfrew 1998*). At the end of the conference Donald responded to

what he had heard, and significantly modified his view on external symbolic storage in the light of Renfrew's contribution (*Donald 1998b*). Renfrew has developed his ideas about 'materiality' and 'the engagement of mind with the material world' (for example, *Renfrew 2005*). My own recent work has been concerned with the symbolising role of architecture in providing an arena for rich and complex multi-mode symbolic representation in communities of the early Neolithic in southwest Asia (*Watkins 2004a; 2004b; 2006*). Our modern academic preoccupation with books, journals, publications, and text should not blind us to the enormous significance of (non-verbal, non-literate) visuo-symbolic representation. In recent years, anthropologists, philosophers, social theorists, semiologists, and, of course, architects have all written enthusiastically about the capacity of architecture in particular to embody ideas, and to inspire, suggest and constrain human behaviour. It is easy to add to the cursory survey of the widespread recognition of the importance of architecture as symbolic representation in *Watkins 2004a*. For example, the distinguished architect Renzo Piano, in a recent interview in *The Guardian* newspaper (21 November 2005), said, "*Architecture in some way has the duty to suggest behaviour. Places are the portraits of communities...*" For those who wish to see how many twentieth-century philosophers, cultural theorists and semiologists have written about the cognitive importance of architecture, Neil Leach has collected pieces by twenty-three (*Leach 1997*).

Building the Neolithic synthesis

In the preceding sections I have argued that in the Epi-palaeolithic period the adoption of sedentary life in permanently co-resident communities coincided with and depended upon the development of a human cognitive and cultural facility with material systems of symbolic representation. For the first time in human history there emerged communities that were conspicuously larger than the biological human brain could cope with. Their size and stability depended on their ability to construct and maintain a variety of entirely novel, abstract concepts, and to concretize these in terms of the structure and architecture of their settlements. These communities were the first to realize the potential of the built environment to act as a complex system of material representation of symbolic information. Unlike books on the library shelf, the built environment is not a work of reference, but a world that we inhabit. It provides arenas for the rich symbolic representation of com-

munity in all sorts of cultural modes. People had learned to create 'theatres of memory', cultural means of proclaiming continuity and memorialising the past that had formed them.

Domestication had proceeded in other ways than that referred to by Peter Wilson (*1988*). I am sure that the major innovations to which Christian Jeunesse draws attention in his contribution to this volume, all consisting of the transformation of materials such as ceramics, lime plaster and heat-treated copper, are a part of the control and manipulation of the world in which early Neolithic communities delighted to explore and live. As Jeunesse says, these were further means of demonstrating control in a "technical system of domestication". And, as Hodder (*1990*) seems to intend, plant cultivation in fields and animal husbandry were further extensions of domestication, the bringing of elements (food plants and animals) of the natural world within the orbit and control of the *domus*. An expert survey of the most recent evidence (*Nesbitt 2002*) indicates that plant cultivation and intensive harvesting, leading to the recognizable domestication of several cereal species and a suite of pulses was practised in central parts of the hilly flanks of the Fertile Crescent by about 8500 BC (at the transition from the early aceramic Neolithic to the later aceramic Neolithic). We are now learning that, at almost the same time, animal husbandry was producing morphological signs of domestication in sheep, goat and cattle (*Helmer et al. 2005*). In short, the classic mixed farming economy, based on a suite of cereals and pulses and at least three ruminants, whether in response to some external pressure or as part of the assumption of control and management of their world, came into being in short order, and was embraced throughout the hilly flanks zone and beyond, into central Anatolia, in the following centuries. The combination of fully symbolic culture, permanent, large, sedentary communities, networking maintaining complex, multi-layered communities at different levels and scales, the control and transformation of natural materials, and the mixed farming economy were the foundations of a way of life that we can recognize as so like our own that we can call it 'modern'.

The spread of the full Neolithic

The term Neolithic has become problematic. It was associated with the appearance of people who lived in village-communities dependent on a farming economy. But in the Levant the Neolithic was also given specific material culture markers, in particular chip-

ped stone traditions that were different from those of the previous Epi-palaeolithic period. As we have seen here, the various components of society, economy, technology and culture that characterize the later aceramic Neolithic appeared at different times. And it deserves to be mentioned that the timing of the various components remains contentious. For our purposes, ‘the full Neolithic’ is the whole package that comes together in the later aceramic Neolithic period. After a relatively slow start over the several millennia of the Epi-palaeolithic period, when larger, sedentary hunter-harvester communities came into existence, the revolution in symbolic culture, the growth in co-resident community size, and the adoption of a number of transformative technologies, including the domestication of plants and animals, gathered pace in the early Neolithic period. The climax in the Levant is what is called the MPPNB (Middle PPNB) phase, about 8500–7600 BC. By that time, there was a human population that had colonised the island of Cyprus (*Peltenburg & Wasse 2004; Swiny 2001*), and they had introduced from the mainland the full suite of cultivated cereals and pulses, and sheep, goat, cattle, pig and fallow deer. These are the first signs of the expansive capacity of the Neolithic.

In the final phase of the later aceramic Neolithic, between 7600 and 6900 BC, there began a major cultural and settlement dislocation that took different forms in different regions within southwest Asia. In the eastern part of the arc of the hilly flanks zone, settlement continued in the intermontane valleys of the Zagros, between Iraq and Iran, but remained on a relatively small scale. In the piedmont of eastern Iraq, and particularly on the alluvium in southwest Iran, the few early agricultural villages spawned a greater and greater number of settlements through the ceramic Neolithic and on through the Chalcolithic and Bronze Ages. The alluvium of southwest Iran has been fairly intensively surveyed, and Hole and Flannery chart the expansion of settlement in the Deh Luran plain, starting from the unique small village of Ali Kosh (*Hole & Flannery 1968; Hole, Flannery & Neely 1969*). Aceramic Neolithic settlements in the northeast segment of the arc of the hilly flanks zone (N Iraq) were confined to the hill country of the Jebel Sinjar (e.g. Qermez Dere or Maghzaliyeh – *Watkins 1992*) or the piedmont (e.g. M’lefaat – *Kozłowski 1998*). From the beginning of the ceramic Neolithic, however, farming villages sprang up in great numbers across the rain-fed plains of the Jezirah, between the Euphrates in north Syria and the Tigris in north Iraq.

The process in the north Levant is unclear, beyond stating the obvious – the aceramic Neolithic settlements in the Euphrates valley in north Syria were abandoned, and their immediate successors have not yet been identified. At least we can be reasonably sure that people moved away from the valley, because the accidents of salvage archaeology that located the aceramic Neolithic sites did not produce ceramic Neolithic settlements. In the southern Levant, the classic PPNB settlements of the Mediterranean woodland zone of inner Israel, the west bank and Jordan valley, and its southern extension beyond the Dead Sea into the Wadi Arabah, all failed during the late phase of the PPNB period. For a while, in that late PPNB phase and for a couple of centuries beyond, there was what has been labelled the ‘mega-site’ phenomenon (*Bienert, Gebel & Neef 2004*). Certain settlements in highland Jordan (the best documented is ‘Ain Ghazal) saw rapid expansion to 10 or even 15 hectares of dense domestic occupation. Rollefson has argued that the rate of expansion was too fast to be accounted for by natural population growth, and he therefore inferred inward migration from abandoned settlements in the Jordan valley and further west (*Rollefson 1989; 1997; 2004*). At the end of the late PPNB period and beyond, there was a trend towards small settlements, with quite ephemeral archaeological signatures, in the margins of the semi-arid interior. At the same time, the ‘mega-sites’ imploded and were abandoned, or, as at ‘Ain Ghazal, continued only as a very small settlement of a quite different character. These new settlements are interpreted as small communities dependent more on herding than on cultivation, where a part of the population remained resident, while another part spent part of the year as nomads, pasturing large flocks of goats and sheep over extensive ranges.

The picture in Anatolia (other than southeast Turkey, which is part of the central arc of the hilly flanks zone) is still unclear due to a lack of information across such a wide and environmentally varied region. In central Anatolia, there is the beginning of a cultural sequence covering the later aceramic Neolithic, pivoting about the famous site of Çatalhöyük in the early ceramic Neolithic, and continuing on into the Chalcolithic. But there is a gap, both geographically and culturally, between the Konya plain and Cappadocian sequence and the next known sites to the southeast. Some have tried to claim the central Anatolian Neolithic as part of the expansion of the Levantine PPNB culture (e.g. *Bar-Yosef & Meadow 1995* or *Cauvin 1994*, though somewhat modified in *Cauvin 2000*), but it is a case that does not stand

up to scrutiny. It is at least as likely that there was a parallel cultural tradition in central Anatolia that came more and more within the orbit of an intensely active Levantine and southeast Turkish interaction sphere as time progressed. The extent to which local domestication took place, or domesticated plants or animals were introduced from the Euphrates zone in southeast Turkey or north Syria remains unclear at present. The same problems beset the relationship between central and western Anatolia. There is no case for supposing that there was a spread of people practising farming from central to western Anatolia, since cultural traditions seem to be quite strongly regional. The Neolithic package of village-sized communities, with shared systems of symbolic representation, shared transformative technologies, and established mixed farming seems to spring into existence fully formed, only shortly after a different-looking cultural package had been put together in central Anatolia.

In conclusion, there is evidence from various parts of southwest Asia of the spread of pastoralist/part-time farmers, or the rapid expansion of village societies across lands that were suited to mixed farming. But, if Anatolia is considered as the land-bridge between the heartlands of the southwest Asian early Neolithic and the Aegean islands, Greece and the Balkans, there is no plausible evidence of either demic expansion or cultural diffusion into central Anatolia, or from there to its western shores. The spread of the Neolithic to western Anatolia and into southeast Europe has a time-dimension in relation to the assemblage of the Neolithic package in the heartland of southwest Asia, but the mechanisms and processes involved in that apparent spread are likely to be quite complex. It seems possible that people in early Holocene communities (I am seeking a term that avoids the Mesolithic-Neolithic divide) were rapidly evolving the same cognitive and cultural facility with fully symbolic material culture that their neighbours in the heartland of southwest Asia had developed only a few centuries earlier. In some parts of southwest Asia, particularly in Anatolia, it is going to be difficult to disentangle exactly which elements of the Neolithic package were home-made, which were acquired by cultural borrowing and emulation, and which may have been carried by demic expansion. As far as the (Indo-European) language-and-farming hypothesis, or the 'wave of advance' model of demic diffusion are concerned, the lack of a simple, homogeneous pattern of spread from the Levant across Anatolia towards southeast Europe gives them a poor starting-point.

Concluding discussion

The main purpose of this contribution was to see if it was possible to bring together into a single account two components of the Neolithic that have tended to be viewed as exclusive of each other. The classic component of the beginning of the Neolithic has long been thought to be the adoption of mixed farming, and a large body of research over half a century has been devoted to identifying the domestication of plants and animals. In recent years, a very different approach has been proposed by archaeologists who argue for the Neolithic as a '*révolution des symboles*', or a cognitive-cultural phenomenon involving the *domus*.

I have argued that the trend towards sedentary village-communities and the trend towards dependence on stored plant food resources in the Epi-palaeolithic are two sides of a single coin. While these new strategies of settlement and subsistence may have been very well suited to the ameliorating environmental conditions after the Last Glacial Maximum, I made a point of showing that the trend had begun at the transition from the Upper Palaeolithic to the Epi-palaeolithic in the Levant. Thus, environmental opportunity cannot have been the driver of the trend. Rather, I have suggested that we should view the remarkable changes that mark the Epi-palaeolithic period as evidence of the way in which the cultural environment was becoming the ecological arena within which human cognitive evolution was developing.

Throughout hominid evolution, the predecessors of *Homo sapiens* had tended towards larger social group size and greater social coherence and inter-dependence as adaptations to their biological environment. Once *Homo sapiens* had begun to master the cultural use of systems of symbolic representation (starting with language), they had the potential to construct and articulate the abstract concepts essential to the formation and maintenance of larger, more permanent and richer communities. In sedentism, they found a fortunate conjunction between the symbolic construction of communities, and architecture and the built environment as the means to concretize their novel concepts. Sooner or later, as permanently co-resident communities grew in size and density in the landscape, for any of a variety of reasons, a greater investment of labour and intensification of food production became necessary.

The growth in size of aceramic Neolithic communities contradicts the ergonomic view of the most ef-

ficient and economic use of labour when set against the resources gained. If ergonomics and efficiency were setting the parameters of co-resident community size, we would not find settlements of several hectares, representing populations counted in thousands. Rather, we would find small clusters of houses representing communities of minimal size scattered across the landscape. There were large settlements even before intensive cultivation and animal herding were adopted. But towards the end of the aceramic Neolithic, the very large settlements emphasise that it was the rich and intensive cultural environment that constituted their *raison d'être* and the engine of their further growth. Efforts to define some kind of settlement hierarchy have failed, and attempts to identify any kind of social hierarchy within settlements have remained at a purely hypothetical level.

Finally, the end of small-group, hunter-gatherer mobility required a replacement for the social role of seasonal congregations and the occasional exchange of members and information; no small community is an island, whether it is a hunter-gatherer band of 25 or a sedentary community of 250. The formation of peer community interaction spheres allowed communities of whatever size to create higher-level commu-

nities. Within southwest Asia the developed aceramic Neolithic landscape consists of autonomous communities, the larger of which presumably had forms of internal social organization that were segmentary and non-hierarchical. And these communities participated in wide-ranging networks of cultural, social and economic interaction in which the non-competitive emulation of symbolic practices and symbolic entrainment tended to promote the intensification of exchange and convergence in systems of symbolic reference (*cf. Renfrew 1986, and see Watkins in press (a)*).

In the last section of this paper, something of the complexity of the processes involved in the spread of the Neolithic package within southwest Asia was outlined. There is no room for a simple hypothesis of demic diffusion from the heartland of southwest Asia across Anatolia towards southeast Europe. Rather, it appears that indigenous communities with their own regional cultural traditions acquired the various elements of the Neolithic package partly on their own initiative and partly through their becoming increasingly engaged with already existing and very attractive peer community interaction spheres.

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